SURVEY OF INSURANCE STATUS 2004 METHODOLOGICAL REPORT

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For:

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I. BACKGROUND

The Survey of Insurance Status 2004 was conducted by the Center for Survey Research of the University of Massachusetts - Boston (CSR) for the Massachusetts Division of Health Care Finance and Policy (DHCFP). The primary purpose of the survey was to estimate the percentage of Massachusetts residents who did not have any form of health insurance. As such, the survey was designed to replicate previous surveys conducted by CSR for DHCFP in 1998, 2000 and 2002. The year 2004 survey would be able to produce estimates which could be compared to these earlier years to examine how situations involving a lack of health insurance have changed over the six year span.

In 1998, a total of 2625 households in Massachusetts were interviewed over the telephone using a random digit dialed (RDD) methodology. In addition, 1000 interviews were conducted using an area probability sample. This latter sample was address based, so people did not need to own a telephone in order to be sampled. This was done because of concerns that a purely telephone sample, such as the RDD, might produce biased results. A comparison of estimates of the percent uninsured computed from these two separate samples in 1998 showed this not to be the case. Uninsured rates differed by only four tenths of a percentage point (8.2% from the area probability sample vs. 7.8% from the RDD sample). This difference was well within statistical 95% confidence limits and demonstrated that a purely RDD telephone sample could produce accurate estimates of the percent uninsured. Because of this finding in 1998, and because area probability surveys are quite expensive since face-to-face interviewing is required, and since not much time had elapsed since these findings, it was decided to forego the area probability sample in the years 2000, 2002 and 2004. This does not imply that an area probability sample should never be performed again as enough elapsed time might suggest the need to reaffirm the 1998 results. But regarding the surveys in 2000, 2002 and 2004, it seemed to be a costly endeavor that was not entirely necessary.

Because of this, the year 2004 survey replicated the three previous RDD surveys. The area probability sample was not performed. Instead of the area probability sample in 2004, RDD interviews were conducted with a statewide sample of 4725 Massachusetts households. This was a significant increase over the 2625 households interviewed in a statewide sample using RDD methodology in the previous three surveys. In 2000 and 2002, resources were made available to take a more in depth look at five particular areas of the state. These areas were: 1) Boston, 2) Springfield, 3) Worcester, 4) Fall River and New Bedford, and 5) Lawrence and Lowell. Separate samples of 425 RDD interviews were conducted in each of these five urban areas, for an additional 2100 RDD interviews. The purpose of these samples was to provide a much better look at these areas specifically, than could be obtained solely from the statewide survey. In 2004, it was decided to forego the targeted look into these five areas, and instead take a more focused look at the entire state. Therefore, all 4725 RDD interviews in 2004 came from a statewide sample of Massachusetts households.

As a whole, the Survey of Insurance Status 2004 would provide a thorough look at how situations in Massachusetts have changed since 1998, 2000 and 2002. This all comes at a time when the Massachusetts economy was showing continued signs of weakness and enabled an evaluation of how this economic downturn affects rates of being uninsured.

II. QUESTIONNAIRE DEVELOPMENT

Since the year 2004 survey was meant to replicate previous efforts, it was very important that the questionnaire remain the same as in those past years. Any changes had to be driven by a strong overriding reason. Regarding the questions that were used to establish whether someone does or does not have health insurance, these questions remained exactly the same as in past years, and were asked in the same exact spot within the questionnaire. This was considered critical as measuring the change in rates of people not having health insurance was the most important aspect of this survey.

There were two areas in which survey questions did change, with both changes being significant. The first change was a question that was added to better clarify the source of someone's insurance. With the myriad ways that Medicaid is offered in Massachusetts (MassHealth, CommonHealth, various MassHealth HMO's under different names, etc.), it is always a concern that people on Medicaid get confused as to the exact source of their insurance. To help clarify this situation, a single question was added to the 2004 survey. It involved asking respondents if the word "MassHealth" appeared anywhere on their health insurance card. The hope was to more correctly classify MassHealth (and Medicaid) members even if there is confusion in the respondent's mind . The exact wording of this question is contained in Appendix A and a discussion of the effects of this change on estimating source of insurance is included later in this report.

The second question change involved household income. Getting accurate estimates of household income has always been a problem area for the Insurance Status surveys. One issue is that people in general, do not like to talk about their income. This is particularly true when they have volunteered their time to participate in a health insurance survey. It is difficult for respondents to understand the necessity of gathering income information as part of a health insurance survey, no matter how the topic is introduced. They just view the questions as a departure from what they believed they had agreed to. Refusal rates for income questions have been consistently around 20% in the previous Insurance Status surveys.

In 1998 and 2000, the income questions were asked in a "tree" format. Under this approach, a respondent is asked if their household income is greater or less than a given amount. Based upon their answer, they are asked similar follow-up questions using other amounts. The idea is to classify household income into designated ranges. The amounts placed into these questions in 1998 and 2000 corresponded to known breakpoints for various percentages of poverty levels based upon household size (i.e., 100%, 125%, 133%, etc. of the known

appropriate poverty level). This was done since eligibility for certain federal and state sponsored health insurance programs is tied to household income in this manner.

Since refusal rates to these questions were high (around 20%), and since income estimated in ranges was not helpful in certain types of economic modeling analyses, it was decided to try a different approach in 2002. In that year, a single income question was asked for a respondent to estimate their total household income. Results of this change proved problematic. Not only did refusal rates remain around 20%, but the resulting income distribution of households proved to be less accurate than the range data from the "tree" approach.

Because of this, in 2004 a move back to the "tree" approach was adopted. In this year, the tree was longer attempting to get narrower household income ranges. The income amounts within the questions were not directly tied to percentages of poverty levels, but instead were aimed at getting the best overall income distribution. Since the ranges in the end were quite narrow, computing poverty levels could still be accomplished for people who answered all the income questions. Some preliminary results of this change will be discussed later.

It should be pointed out that the structure of the year 2004 questionnaire remained the same as in previous years. This structure is modular with four modules. Initially, all households get the screening module. In this module, a household roster is created identifying all persons living in the household by age, gender, employment status, educational status, health status and marital status. In addition, it is ascertained whether each household member does or does not currently have health insurance coverage. Finally, those who have health insurance coverage are grouped by whether they are covered by the same health insurance policy or government program. It is from this screener module that rates of being uninsured can be computed.

The other modules within the questionnaire were as follows:

Insured module – This module is asked of any household that has at least one person under 65 years of age that has health insurance coverage. The questions in the module pertain to the source of insurance, the cost of the insurance, the types of benefits obtained through the insurance, and whether anyone covered by this insurance had any periods of having no health insurance in the previous 12 months. In addition, a randomly selected person 18 years of age or older was asked questions about health status and health service utilization in the previous 12 months. Finally, health status and health service utilization information was obtained for a randomly selected child in the household. It should be pointed out, that if more than one health insurance policy or program existed in the household, then one was randomly selected for these questions. This was done to reduce respondent burden. For other health insurance policies or programs that exist in the household, only the source of insurance is obtained at the end of this module.

Uninsured module – This module was asked of any household that had at least one person who did not have health insurance. The questions were asked of all adults 18 years old or older and of a randomly selected uninsured child. The questions pertained to how long they had been without insurance, how they lost the insurance they had, and how they were currently accessing health care services. Their knowledge of and application status for various government programs was also obtained.

65+ module – This module was asked of any household that had at least one person 65 years of age or older. If more than one person 65+ existed in the household, then one was randomly selected. The questions generally pertained to any supplemental health insurance they had in addition to Medicare. Of particular interest was the adequacy of coverage for prescription drugs.

Most households would be asked the screener module and one additional module, depending upon which was applicable. However, any two or all three modules could be asked if they were applicable. Therefore, interview length was determined by how many modules

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applied to each household. All modules could be answered by anyone in the household who considered themselves knowledgeable about health insurance topics. The household respondent could change as we progressed into new modules if it became apparent that another household member would know more. The structure just outlined is the same as in previous survey years. Once the questionnaire was finalized, it was translated into Spanish. A second translator then took the Spanish version and translated it back into English. This second translator did not see the original English version. The original and back-translated English version were compared to decide if the translation was accurate. Any discrepancies were brought to both translators who decided upon the best way to ask those questions in Spanish. The questionnaire was only translated into Spanish as people who spoke any language other than English or Spanish were considered ineligible for the study. In Massachusetts, only small numbers of people speak any language other than English or Spanish. Since the questionnaire was pretested in 1998 and again in 2000, and since only minor changes were made in 2004, there was no survey pretest conducted in 2004.

III. SAMPLE DESIGN

The sample design for this study consisted of a stratified statewide random digit dialed (RDD) sample. To begin, the state of Massachusetts was divided into five geographic regions. These regions were:

Region 1: Berkshire, Hampden, Hampshire, and Franklin Counties

Region 2: Worcester Country

Region 3: Essex and Northern Middlesex Counties

Region 4: Norfolk, Suffolk, and Southern Middlesex Counties

Region 5: Plymouth, Bristol, Dukes, Barnstable, and Nantucket Counties

Table 1 defines how Middlesex County was split for sampling purposes between Regions 3 and 4. These regions became the strata for the stratified statewide RDD sample design. It

should be pointed out that this stratification was identical to the sample designs for previous survey years.

TABLE 1: BREAKDOWN OF MIDDLESEX COUNTY FOR SAMPLING PURPOSES

The following towns were joined with Essex County to form Region 3 within the sample design. All other towns in Middlesex County were assigned to Region 4.

1.	Ashby	12.	North Reading
2.	Ayer	13.	Pinehurst
3.	Groton	14.	Reading
4.	Pepperell	15.	Tewksbury
5.	Shirley	16.	Tyngsboro
6.	Townsend	17.	Wakefield
7.	Billerica	18.	Westford
8.	Chelmsford	19.	Medford
9.	Dracut	20.	Melrose
10.	Dunstable	21.	Stoneham
11.	Lowell	22.	Wilmington

Within each sample stratum, the Genesys system was used to select a simple random sample of telephone numbers. The Genesys system is a widely used list assisted method of drawing RDD samples. The advantages of using Genesys over a traditional Waksberg-Mitofsky RDD sample selection are: 1) the cost savings of not having to do primary screening to locate residential clusters of telephone numbers (a cluster is an area code + exchange + two random digits which defines 100 possible telephone numbers), since Genesys defines the clusters for you, and 2) the resulting Genesys sample is unclustered since all possible residential clusters are used in the sample selection and not simply the ones identified during a limited primary screening.

The goal of the RDD sample was to conduct 945 completed screening interviews within each stratum for a total of 4725 completed screeners. This stratification was done to increase the number of interviews in regions of the state which are less populated. The stratification insured approximately 945 interviews from each region so that more accurate regional estimates could be made.

Regarding the other modules of the questionnaire, the following rules held:

1. Insured Module – Households with at least one insured person under 65 years of age were eligible for this module. Each household that had such a person was assigned to have an insured module completed. This module asked many questions about the particular type of insurance held. For information regarding health status and health care utilization, a random selection of one person 18 years of age or older was done and information was gathered about this one particular person. For children under 18 in insured households, information about health status and health care utilization was collected for one randomly selected child only. It should be pointed out that information about the general health insurance status of each household member was collected in the screener. Information from the screener included who was jointly covered under each health care plan or program identified. If more than one health care plan existed in any household, one of them was randomly selected to be the focus of the questions in the insured module.

2. Uninsured Module – Information was gathered about each uninsured person 18 years of age or older in each household. For uninsured children, information was gathered for only one randomly selected child within each household.

3. 65+ Module – Households with at least one person aged 65 or older were eligible for this module. All such households were assigned to have a 65+ module completed. If a household contained more than one person 65 or older, one was randomly selected to be interviewed.

The interviews were conducted using the Center's computer assisted telephone interviewing (CATI) system. CSR uses the CASES system out of the University of California at Berkeley. All random selections within households were done by having CATI identify eligible household members from the screener and then use a random number generator to select one person (or health plan). This insured a completely random selection. Results from the RDD sample will be discussed in the next section of this report.

IV. FIELD RESULTS

The data collection period for the statewide sample began on February 7, 2004 and continued until August 8, 2004. Tables 2 and 3 describe the screening results of the data collection effort, and results from attempting to complete interviews with successfully screened households. It is important to remember that rates of being uninsured are computed from the screening portion of the interview. From Table 2, it can be seen that a total of 4748 screening interviews were completed with an overall response rate of 60.4%. This response rate compared very favorably with the 59.6% in 2002, the 62.1% in 2000 and the 63.2% rate obtained in 1998. As with any RDD survey, the largest component of nonresponse was refusals. There were 2552 households who simply would not participate in the survey. Each of these refusal households was contacted three times in an attempt to convince them of the importance of cooperating in the study. Any further attempts to call these households was considered to be not worth the effort and approaching harassment. The response rates across strata were fairly consistent with the Norfolk-Suffolk County Stratum (Region 4) having the lowest response rate at 56.6% and Region 2 which is Worcester County having the highest response rate at 65.1%. Region 4 having the lowest response rate is not unexpected since this region contains Boston, and interviewing in a large urban area is always more difficult. This region had the lowest response

rate in 1998, 2000 and 2002 (56.5% in 1998, 56.2% in 2000 and 56.5% in 2002) as well. Worcester County (Region 2) also had the highest response rate in 2002 at 64.6% and in 1998 at 69.2% while Region 1 (four counties from Western Mass.) had the highest response rate in 2000 at 67.8%. As can be seen, results from the year 2004 survey mirrored the results from previous years.

TABLE 2: SCREENING RESULTS FROM STATEWIDE SAMPLE									
Stratum	Total Dialed	Nonresidential[1]	Refusals	Other Noninterviews[2]	Not Eligible[3]	Unconfirmed Status[4]	Completed Screening Interviews	Resolution Rate[5]	Estimated Residential Rate[6]	Response Rate[7]
Region 1: Western Mass.	2930	1191	475	104	27	199	934	93.2%	56.4%	61.4%
Region 2: Worcester County	2940	1133	474	75	21	198	1039	93.3%	58.7%	65.1%
Region 3: Northeast Mass.	3236	1388	538	102	23	217	968	93.3%	54.0%	59.9%
Region 4: Boston Area	3944	2012	539	122	42	349	880	91.2%	44.0%	56.6%
Region 5: Southeast Mass.	3083	1248	526	110	20	252	927	91.8%	55.9%	58.9%
Total	16133	6972	2552	513	133	1215	4748	92.5%	53.3%	60.4%

1.   Includes businesses, group living quarters, out of service numbers, and fax or modem lines. Fax and modem lines are called a minimum of three times at various times of the day over several days to confirm they are not residential.

1.   Includes people too ill to complete an interview, people who could not be interviewed after many attempts, and other such non-refusal noninterviews.

2.   Includes households which speak languages other than Spanish or English.

3.   Telephone numbers whose residential status could not be determined after many calls.

4. This is the rate at which we were able to successfully determine the residential status of telephone numbers.

5. This is the estimated rate at which telephone numbers connect to a residential household.

6. The response rate is computed as: Interviews/(Interviews + Refusals + Other Noninterviews + (.04 x Unconfirmed Status)). The rate of .04 applied to the Unconfirmed Status Telephone numbers is estimated from a follow up of a sample of unconfirmed numbers.

Table 3: Results from Completing Interviews with Screened Households In the Statewide Sample				
A. Households with at least one insured person				
Stratum	Households Identified	Households Interviewed	Response Rate	Overall Response Rate[1]
Region 1 Western Mass.	754	712	94.4%	58.0%
Region 2 Worcester County	847	802	94.7	61.6
Region 3 Northeast Mass.	782	730	93.4	55.9
Region 4 Boston Area	723	674	93.2	52.8
Region 5 Southeast Mass.	735	690	93.9	55.3
Total	3841	3608	93.9%	56.7%
B. Households with at least one uninsured person				
Stratum	Households Identified	Households Interviewed	Response Rate	Overall Response Rate[1]
Region 1 Western Mass	115	100	86.7%	53.2%
Region 2 Worcester County	113	98	86.7	56.4
Region 3 Northeast Mass.	137	119	86.9	52.1
Region 4 Boston Area	96	80	83.3	47.1
Region 5 Southeast Mass.	131	118	90.1	53.1
Total	592	515	87.0%	52.5%

C. Households with at least one person 65 years old or older				
Stratum	Households Identified	Households Interviewed	Response Rate	Overall Response Rate[1]
Region 1 Western Mass.	216	201	93.1%	57.2%
Region 2 Worcester County	236	213	90.3	58.8
Region 3 Northeast Mass.	231	206	89.2	53.4
Region 4 Boston Area	193	182	94.3	53.4
Region 5 Southeast Mass.	229	217	94.8	55.8
Total	1105	1019	92.2%	55.7%

1. The overall response rate is the product of the appropriate screening response rate and the response rate for completing an interview with a successfully screened household.

One item in the computation of these response rates that deserves special note concerns the unconfirmed telephone numbers. These are telephone numbers that could not be confirmed as being residential despite numerous calls. Each of these numbers was called at least 12 times and most were dialed even more. The fact that only 7.5% of all telephone numbers dialed (1215/16133) had an unconfirmed status recognizes the extreme lengths to which CSR goes in order to contact all telephone numbers. Based upon past efforts in which random samples of such unconfirmed telephone numbers were tracked through the telephone company, only about 4% are expected to be residential. This estimated rate has proven to be consistent over time in RDD surveys conducted at CSR. Therefore, for purposes of computing response rates, 4% of these unconfirmed telephone numbers are considered residential.

Although refusals are the biggest problem in trying to get the highest response rates possible in RDD studies, what is not shown in the previous tables is that about 35% of all initial refusals in this study were eventually converted into completed interviews. This demonstrates how contacting all initial refusals two additional times does lead to a significant increase in overall response rates. It also is a testament to the group of highly trained refusal converters that CSR maintains as part of its' interviewing staff.

In examining Table 3, it is evident that few people refused to be interviewed after the screening interview was completed. In fact, over 93% of all screened insured households, 92% of elderly households, and 87% of all uninsured households completed the interview. The fact that the uninsured households are a bit more difficult to get to complete the interview is not surprising as these would be expected to be the most difficult interviews. The fact that so few uninsured households were lost after screening is again a testament to how hard CSR interviewers worked in making sure these interviews were completed.

In conclusion, CSR surpassed all goals set out for the RDD portion of the study. The 4748 completed screening interviews surpassed the 4725 targeted. At least 87% of all screened households completed the interview and depending upon which sections of the interview were required, this percentage rose to 93%. This must be considered quite successful. Overall, the 60.4% screening response rate compares favorably with the best response rates to RDD surveys that are obtained these days by top national survey research centers. Considering this survey was done during difficult economic times when interviews, in general, are more difficult to conduct, the effort must be considered an overall success.

V. WEIGHTING

The weighting for the Survey of Insurance Status 2004 is fairly complicated, due to the modular construction of the questionnaire and the several random selections that took place (i.e., one health plan if more than one existed in the household, one person 18+ years of age covered by the health plan if more than one was found, one person 65+ years of age if more than one was found in the household, and one uninsured child if more than one was found). In addition, there is the fact that households or people may be the analytic unit of interest. Analysis of any part of these data without appropriately weighting could lead to completely erroneous results.

A. STATEWIDE SAMPLE

As stated in the sample design section, the RDD sample began with stratifying the state into five regions. Therefore, the probabilities of selection for sample telephone numbers differed by stratum (region). This must be accounted for within the weighting of these data. Table 4 gives the base weights for each of the five stratum. These base weights are simply the inverses of the probabilities of selection.

TABLE 4. BASE WEIGHTS FOR STATEWIDE SAMPLE		
STRATUM	STATE REGION	BASE WEIGHTS
REGION 1	Western Mass.	203.778

REGION 2	Worcester County	180.286
REGION 3	Northeastern Mass.	269.536
REGION 4	Boston Area	550.286
REGION 5	Southeastern Mass.	318.485

These weights became the building blocks upon which all weights on the data files are derived. From this point on, it is easier to discuss weights for each of the data files separately as these data files correspond to the modules of the questionnaire.

1. The Screener File:

This is by far the easiest file to use. There is basically one weight on the screener file and it is called SCRWGHT. This weight is simply the base weight adjusted for survey nonresponse and for multiple residential telephone numbers per household. The nonresponse adjustments were done by stratum since, as Table 2 showed, the screener response rates differed slightly by stratum. These weights are considered inflation weights since if the sample household's weights (i.e., SCRWGHT) are summed over all sample households, then this sum is an approximation of the number of households in the state. The adjustment for multiple residential telephone numbers per household was based upon questions asked in the interview to determine if more than one telephone number could be used to reach the household and if any such numbers were used for residential purposes (i. e., it was not a dedicated fax, modem, or business number). The adjustment is capped and is simply 0.5 for any household with more than one residential telephone number.

The SCRWGHT is a household weight since the sample design called for sampling households. Since the screener collected data about each household member including their gender, age, employment status, marital status, education status, health status, and health insurance status, each household member carries the same SCRWGHT as a person weight. The screener file, in fact, is a person level file with one data record per person with the SCRWGHT as the person level weight. Additionally, information gathered in the demographic section of the questionnaire was merged onto the screener data file. This information included each person's race and Hispanic origin as well as zipcode and a measure of the household's income status. In

this way, more detailed information about each sample household and person is available on the screener file.

The sum of the screener weights across all persons on the screener file is an estimate of the number of people in Massachusetts, living in households with telephones. Since over 98% of all households in Massachusetts have telephones, this is basically close to an estimate of all persons living in households in Massachusetts. Table 5 compares weighted results from the screener file to data from the 2000 Census updated to 2003 using Current Population Survey (CPS) data from the Census Bureau for Massachusetts. When viewing this table, it is important to note that these weighted results were produced without using any post stratification weight adjustments to try to force agreement with the Census. In this light, it is quite remarkable that such close agreement was obtained and is a testament to how rigorously CSR pursues all interviews.

Table 5: COMPARISON OF WEIGHTED SURVEY RESULTS TO CENSUS ESTIMATES		
Result	Census Estimate	Statewide DHCFP Survey
Total Eligible People	6,208,252	6,208,047
Percent White	84.5%	85.5%
Percent Black	5.4%	5.4%
Percent Asian	3.8%	3.0%
Percent Native American	0.2%	0.6%
Percent Pacific Islander	0.1%	0.1%
Percent Multi Racial	2.3%	1.9%
Percent Other Race	3.7%	3.5%
Percent Hispanic	6.8%	4.9%

The primary purpose of the Screener File is to compute estimates of the percent uninsured. With the proper weights applied (i.e., SCRWGHT), this percentage is correct for statewide estimates, regional estimates, or estimates for other subgroups of the population (e.g., blacks, Hispanics, people under 30, etc.).

2. The Insured File:

This file contains information from households in which people under 65 years of age with health insurance were found. Weighting of data from this module of the questionnaire begins by considering the base weights adjusted for survey nonresponse and multiple residential telephone numbers in the same manner as the screener weight. In addition, the insured weights must be adjusted for the following two factors:

1. If a screener identified more than one health insurance plan existing in a household, say a mother was covered by one plan while her children were covered by another, then only one plan was selected to be described in the insured module. This selection of one plan was random. Sample weights must be adjusted to recognize this random sampling of insurance plans. This sampling was done in order to keep the interview length to approximately 20 minutes and to help increase response rates. For households with several health insurance plans, the interview would become long and repetitious if they needed to answer detailed questions about all health insurance plans in the household. The quality of the data would also suffer if respondents were forced to answer all these questions.

2. As Table 3 showed, there were some households for which a screener was completed, but for which an insured module was not. The sample weights needed to be further adjusted to take account of this second level of survey nonresponse.

The weight on the insured file which correctly adjusts for these factors is called INHHWGT. This weight should be used with questions A2 through A34F of the questionnaire. These variables describe characteristics of the selected insurance plan such as the source of insurance, amount of the deductible, and the types of health care that are covered. The INHHWGT variable correctly adjusts for all factors required for accurate estimates of these variables.

The insured file is a household level file since there is one data record per sample household. For some questions, information is gathered about each person covered by the selected plan. This is true for questions A2 through A13m which ask more detailed employment information about each plan member 18 years of age or older, and questions A31 through A34f which ask about periods of having no health insurance coverage for each plan member during the past 12 months and up to the past 3 years. The INHHWGT is still appropriate for these variables, as long as all person level data is aggregated for analysis purposes. For example, the employment status of all adults 18+ years of age should be considered with each adult being assigned the INHHWGT. Any one adult's variables should not be looked at alone.

A second weight placed onto the insured file is INPERWGT. This weight takes the INHHWGT and multiplies it by the number of persons in the selected plan. It can be used to analyze questions A6a and A14 through A30. The difference between the INPERWGT and the INHHWGT is one of focus. If one is considering the household, or insurance plan as the focus of analysis, then the INHHWGT is appropriate. If one is considering people covered by health insurance as the focus of analysis, then the INPERWGT is appropriate. An example may serve to clarify the situation. If source of insurance is being studied, and INHHWGT is being used for analysis, then questions such as what percentage of health insurance plans are being obtained through someone's employment, or what percentage of health insurance plans are being obtained through government programs can be answered. If the same variables were analyzed using INPERWGT, then questions such as what percentage of insured people get their insurance through an employer or what percentage of people are insured by MassHealth (or Medicaid) can be answered. These questions are similar but are different questions. One set focuses on insurance plans as the basis for analysis and the other focuses on insured people. Either is appropriate and it just is important to decide which is the focus of a particular analysis.

Beginning with question A35 and continuing through question A45, another factor enters into the weighting scheme. These questions deal with health service utilization and current health status. This information was gathered for only one randomly selected adult 18 years of

age or older covered by the selected health plan. Basically, the screener identified the ages of all people covered by any given health insurance plan and then a random selection could be performed from all such members. This was again done to limit the length of the questionnaire and not involve the respondent in a set of repetitive questions about all household members covered by the selected plan. This type of repetitive questioning can lead to poor quality data and break-offs which affect the overall response rate. The INADLWGT variable on the data file is the correct weight to use for these questions. This weight multiplies INHHWGT by the appropriate number of persons 18 years of age or older covered by the selected health plan, and therefore adjusts the weight for this random selection.

Finally, questions AC35 through AC45 concern the health service utilization and health status of a child in the household. For these questions, a randomly selected child covered by the selected plan was chosen if more than one child was covered by the plan. In this instance, sample weights should be adjusted for the number of children covered by the plan. The weight variable which should be used for these questions is INCHDWGT. This weight acts in a similar manner as INADLWGT except for the children in the plan.

To summarize, the following weight variables should be used to correctly weight survey questions from the insured module:

INHHWGT   Questions A2 through A34f (for insurance plan level analyses)

INPERWGT   Questions A6a and A14 through A30 (for insured person level analyses)

INADLWGT   Questions A35 through A45

INCHDWGT   Questions AC35 through AC45

3. The Uninsured Files

These files contain information from households in which people with no health insurance were found. Information was collected about each uninsured person 18 years of age or older. This information could be obtained directly from each uninsured person or through an informed proxy. In addition to this information, if any uninsured children lived in the household,

then information was collected about one randomly selected uninsured child. This again was done to keep the interview length within reason and also to keep the respondent from having to answer a set of questions about each uninsured child which would be very repetitive. One file was created for uninsured adults and a second file was created for uninsured children. These files are both person level files with one data record per person.

There is one weight on the adult uninsured file, namely UNADLWGT. This weight again begins with the appropriate base weight adjusted for survey nonresponse and multiple residential telephone numbers at the screener level. This weight is further adjusted for the additional survey nonresponse caused by households which completed a screener and not an uninsured module. This further nonresponse adjustment is computed separately for each stratum.

Likewise, the child uninsured file has one weight and it is called UNCHWGHT. This weight is constructed in the same manner as the uninsured adult weight, except it is further adjusted to account for the number of uninsured children in the household.

These weights can be used for all variables on these files and will make all appropriate adjustments.

4. Elderly File

This file contains information from households which have at least one person 65 years of age or older. The questions primarily pertain to supplemental insurance to Medicare. If more than one person 65 years of age or older lived in the household, then one was randomly selected to be the focus of the survey questions. Again, the information could be obtained directly from the selected elderly adult or through an informed proxy.

The weight on the elderly file is named SENWGT. The weight is constructed like all others by taking the appropriate base weight, adjusting for screener nonresponse and multiple residential telephone numbers, further adjusting for the random selection of one person 65 years of age or older, and finally adjusting for survey nonresponse for households that completed a

screener and not an elderly module. This last adjustment was again done separately for each stratum. This weight should be applied to all questions in the elderly module.

B. NOTES ON WEIGHTING

It should be stressed once again that analyses of these data without appropriately weighting could lead to completely erroneous results. This is a complex sample and must be weighted for accurate analysis.

In addition, it must be remembered that the weights on these data files are inflation weights. They sum to statewide estimates of households or persons. This is fine for creating unbiased sample estimates of population totals or proportions, for example the total number of uninsured persons statewide or the percent of the population that is uninsured. These estimates will be computed correctly with any standard statistical package such as SAS, SPSS, STATA, or many others.

However, estimates of variances or standard errors for sample statistics are another matter. Since the sample design is not a simple random sample, the ordinary statistical packages cannot produce accurate estimates of variances or standard errors unless they have additional modules for accomplishing this task. Therefore, confidence intervals or tests for significant differences may not be accurately performed in these packages, whether the data are appropriately weighted or not. A statistical package such as SUDAAN, STATA, or WESTVARS must be used in order to create accurate variance estimates. SAS has a SUDAAN PROC which can be used while SPSS has a module for analyzing complex surveys. For all data files, the stratification must be correctly identified. The variable "STRA" can be used for this. Since a simple random sample of telephone numbers was drawn from within each stratum, this is the only complicating factor for data analysis. With appropriate weighting and correct identification of sample complexities, accurate sample estimates and sample variances can be

computed. In addition, if a stratum (region) is analyzed separately, then the variance will be correct from SAS and all packages, since within a region, it is a simple random sample.

The following table is provided as a guide to determine the possible effects of stratification on statewide estimates. This table contains estimated design effects for percent uninsured for several subgroups of interest. These design effects are the factors by which estimated standard errors from assumed simple random sampling should be multiplied to adjust for the stratification. In other words, if data were analyzed in SAS and the stratification was ignored, then the following table produces factors which should be used to inflate the estimated standard errors produced in the SAS output. For example, if the statewide uninsured rate was being estimated, and a 95% confidence interval was desired, then the estimated standard errors produced by SAS for computing this interval should be multiplied by 1.13. Each variable will have it's own design effect, and the ones displayed in Table 6 are examples of about how large these factors can be. As can be seen, for the uninsured rate, standard errors consistently run from 9% to 14% higher due to stratification.

TABLE 6: ESTIMATED DESIGN EFFECTS	
Percent Uninsured	
Population	Estimated Design Effect
Everyone	1.13
Under 18 years old	1.09
18-64 years old	1.14
Under 65 years old	1.13

VI. EFFECTS OF QUESTION CHANGES IN THE 2004 SURVEY

A. SOURCE OF INSURANCE

As earlier mentioned, one significant change in the 2004 Insurance Status Survey was a question that was added to help better classify people who are on Medicaid (MassHealth). The question simply asked all people who were originally classified as having health insurance through any source other than MassHealth if the insurance card they used had the word "MassHealth" printed anywhere on it. The exact wording for this question is contained in Appendix A. The rationale for adding this question was that MassHealth is delivered in Massachusetts through many differently named vehicles, but by 2004, all of these had that single word on the insurance card that was issued.

As Table 7 indicates, this change resulted in more people being classified as a MassHealth recipient. The percentage of people on Medicaid or MassHealth went from 13.5% of all insured people under 65 to 15.8%, a significant increase of 2.3 percentage points. The size of this increase indicates the potential confusion that exists among people on MassHealth in Massachusetts. One surprise is where the additional MassHealth people would have been classified if not for the additional question. The vast majority of these people would have been classified as getting insurance through their employer (75.8% of all people under 65 without the question versus 73.7% with it). Very small numbers of people get reclassified as MassHealth that would have originally been classified as group membership (3.8% without the question versus 3.7% with it) and through direct payment (4.2% versus 4.1%).

One possible explanation for this particular shift from employer based insurance to MassHealth is that although some employers may not offer insurance themselves, they may help employees get on MassHealth by assisting them in making the correct contacts and filling out the correct forms. In this way, people may associate getting onto MassHealth through their employer. More analysis needs to be done to better clarify this situation. Overall, the additional question in 2004 seems to have helped shed some light onto a difficult topic and to better classify people's source of insurance.

Table 7. Changes in Source of Insurance Due to the Added Question
(for people under 65 years of age)

Source of Insurance	Percentage Before Added Question	Percentage After Added Question
Employer	75.8%	73.7%
Medicaid (MassHealth)	13.5	15.8
Medicare	0.5	0.5
Military/Veterans	0.5	0.5
Direct Payment	4.2	4.1
Group Membership	3.8	3.7
Former Employer	1.1	1.1
School	0.2	0.2
Other	0.4	0.4

B. INCOME QUESTION

As previously discussed, measuring income has always been difficult in the Insurance Status Surveys for a number of reasons. Through 2000, a "tree" approach was used to estimate income ranges with the income amounts within the questions tied directly to percentages of poverty levels. In 2002, a single direct question was asked for an estimate of household income. In 2004, the "tree" approach was again used, but with more questions leading to narrower estimated income ranges and with income amounts within the questions aimed at better overall income distributions, rather than poverty level cut points.

More analysis needs to be done to determine if this is indeed a better approach, but a few points can be easily made. First, the overall rate for which no information was obtained from the income questions in 2004 remained high at 23.5%. This compares to the 30.3% in 2002 and the 17.1% in 2000. It is still very difficult to get people to answer any type of income question.

Regarding the distribution of income, Table 8 displays income as a percentage of poverty across the last three survey years. It does seem that the problem of too many people at the

highest income range that was evident in 2002 with the single question approach has been reduced (63.4% of people at >400% of poverty in 2002 versus 28.3% in 2004). However, due to the additional number of income questions in the elongated "tree", 6.4% of people had incomplete data on income in 2004 compared to 5.1% in 2000, when a smaller number of questions was used. Overall, getting information on income is still a difficult issue within the Insurance Status Surveys, and an issue that needs more thought and research.

Table 8. Distribution of Income Across Survey Years

Income as a Percentage of Poverty Level	Survey Year		
	2000	2002	2004
<133%	7.0%	8.0%	13.4%
133% - 150%	3.0	1.5	8.0
151% - 200%	9.4	5.4	2.9
201% - 400%	27.5	21.7	37.3
>400%	48.0	63.4	28.3
Incomplete Data	5.1	------	10.1
Percent Refusing to Answer	17.1%	30.3%	23.5%

VII. SUMMARY AND ACKNOWLEDGMENTS

The Survey of Insurance Status 2004 was a difficult survey but a successful one. Extremely respectable response rates were obtained for the statewide sample. Data were collected under tight time constraints and all survey goals were reached. The survey provides an excellent snapshot of Massachusetts residents in the year 2004 regarding their health insurance profiles. It is also directly comparable to the 1998, 2000 and 2002 surveys for an examination of changes over time.

I would like to thank Amy Lischko of the Massachusetts Division of Health Care Finance and Policy for her leadership and her ability to keep this project focused on the important issues. I would also like to thank Alison Hauser of CSR who served as my assistant on this project. She was invaluable in programming the CATI questionnaire, creating all data files, and monitoring all aspects of the project from beginning to end. Her dedication and vigilance, as well as her

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The data and results presented in this report are due to the hard work of all the people just mentioned. Any errors or oversights in this report are mine alone.

Appendix A:

Wording of Additional Source Of Insurance Question

Does the word "MassHealth" appear anywhere on the insurance card you use when needed at a doctor's office or pharmacy?